# A tool for rapid qualitative assessment of hospital-based emergency medical services among developing health sectors

Mark E. Keim*



## Background

The global demand for emergency medicine has greatly increased in recent years.[1] Emergency medical systems have become an essential part of modern public health and medical systems. Developing nations, in particular, are experiencing an increasing need for emergency medical services (EMS) as they experience both the negative and positive consequences of development and modernization. As nations develop, populations experience an "epidemiologic transition"[2] from the predominant morbidity and mortality patterns of infectious diseases to those patterns more associated with lifestyle. The benefits of industrialization and economic growth are also tempered by new health hazards that include a higher incidence of obesity, sedentary behavior, dietary excess, and substance abuse as well as occupational illness, toxic exposure, vehicular crashes and large-scale violence. These new health risks commonly translate into an increased incidence of cardiovascular and lung disease, diabetes, cancer and injuries.

**Emergency medical systems have become an essential part of modern public health and medical systems.**

Emergency medical services are provided during the time-critical "windows of opportunity" for these new "diseases of development." In effect, among developed societies, emergency health has now joined preventive and primary care as an integral component of primary and secondary prevention strategies.

## Global development of emergency medicine

The globalization of emergency medicine began shortly after its maturity as a specialty. Over the past five years, medical journals have documented numerous reports describing the international practice of emergency medicine, (including those authored by Australians).[3] "A global network of international emergency medicine is assisting the development of emergency medicine worldwide and now includes international organizations, academic institutions and individuals...."[4] However, few of the interventions have utilized validated methodology or standardized procedure.[1,5]

Emergency physicians involved in international developmental programming among depressed economies have very few references or guidelines other than personal experience upon which to base their decision-making. There is no consensus for definition of indicators or measures of process and health outcome. There are no international standards for workforce, facilities, resource administration or management essentials.

In 1996, Holliman et al. published a model for evaluation of international emergency medical developmental projects.[1] These guidelines offer a foundation of indicators for predicting the effectiveness of plans for developmental programming in emergency medicine. Van Rooyen, et al. also published a model for assessment of emergency medical services as relating to the pre-hospital setting. This useful tool identified indicators for a system-based evaluation of emergency medical services for use in developing nations.[6] In comparison, there are no current guidelines or models that offer criteria for qualitative assessment of hospital-based emergency medical services among developed nations.

Towards global standards for emergency medical practice

There remains a need for a standardization of methods involving the worldwide promotion of emergency medicine. Evaluations and interventions pertaining to emergency medical systems should be based upon objective indicators.

*Emergency Preparedness & Response Branch, Division of Emergency and Environmental Health Services, National Center for Environmental Health, Centers for Disease Control & Prevention, Atlanta, GA, USA. Also: Center for International Emergency, Disaster and Refugee Studies, Johns Hopkins University School of Medicine, Baltimore, MD, USA. Contact: Mark Keim M.D., Emergency Preparedness & Response Branch, Centers for Disease Control & Prevention, 4770 Buford Highway, MS-F38, Atlanta, GA USA 30041. Tel: (770) 488-4597. E-mail: mkeim@cdc.gov

Outcomes should be measurable. Measurement requires quantification of certain attributes inherent to the qualities of the system. A qualitative definition of indicators must first be developed before measurable standards and comparative analysis may proceed. Emergency physicians working on developmental projects throughout the world must share a common reference for assessment of existing hospital-based practices.

Table 1. Nurse-patient ratios among emergency departments of three nations

| Country location | Patients/nurse/day |
|---|---|
| USA (standard) | 3.9 |
| Caribbean island | 4.3 |
| Pacific island | 5.6 |

While providing international health consultation, the author developed and utilized a rapid screening tool for qualitative assessment of hospital-based emergency medical services. Doctors and health agencies in developing nations have expressed a growing need for this rapid evaluation of emergency response capacity. A brief questionnaire, (of fewer than 200 data points), is provided to assist others in design and evaluation of all types of emergency departments. (See Figure 1)

The questionnaire is intended to be applicable for assessment of a wide range of emergency facilities. It may be used to characterize emergency practice among developing nations, but it is also adapted to evaluate the more modern emergency medical system as well.

## Discussion

The questionnaire is offered as a screening tool for rapid description of emergency response capacity among emergency departments throughout the world. The author selected indicators from a variety of categories to include resource utilization patterns, patient demographics, staffing patterns, characterization of care-providers, physical plant, equipment and supplies, patient-centered standards, and departmental management systems. By establishing common terminology, the specialty may also progress towards international comparative study among nations according to geographic location, socioeconomic status, burden of disease and workforce development.

Indicators of patient utilization within the unique emergency medical environments of the developing world will allow for comparison with existing standards of the specialty throughout all nations. Patient census data according to acuity, times of presentation, staffing needs, demographics and admission patterns provide useful information for evaluation of service utilization, target population and service area. As an example, the patient-nurse ratios of several nations are listed in Table 1.

Knowledge of standardized values, (such as that of patient-to-caregiver ratios in Table 1), will allow policy-makers to predict needs and focus resources related to emergency health. Standardized reporting will allow investigators to compare findings and contrast variables for association and effect. A standard characterization of staff educational levels, specialty training and work-patterns can offer important insight into the functional level and workload of clinical care.

The more developed medical institutions have established standards for the physical plant of emergency department facilities, including waiting rooms, examination rooms and critical care resuscitation rooms. However, those standards may not always apply in the setting of different economic, cultural and professional settings of the developing world. Although standard values for emergency care among the most developed nations may not always be directly applicable to those needs and resources of the developing countries, these existing standards do offer a reference and precedent for comparison of other countries' experiences. A formulary for essential and technologically appropriate medical equipment and supplies is yet to be compiled for developing emergency medical systems and/or those operating under austere conditions.

The Joint Commission for Accreditation of Healthcare Organizations (JCAHO) is a U.S.-based not-for-profit organization that accredits the majority of hospitals in the United States, (more than 19,000). There are comparable organizations in operation among most developed countries. The Joint Commission International (JCI), a subdivision of JCAHO, has been working with the health sectors of developing nations for nearly a decade to develop nation-specific standards for hospital care. Components of this questionnaire that are related to patient-centered and healthcare organization management standards will also integrate with JCI perspectives for development, review and accreditation.[7]

Any strategies for evaluation of developing emergency medical systems should also include a range of global standards for cultural and technological appropriateness, sustainability, evidence-based decision making and intervention effectiveness.

## Conclusions

The global demand for emergency medicine has greatly increased in recent years. Developing health sectors in developing countries have expressed a growing need for rapid evaluations of emergency response capacity among emergency care facilities. Emergency physicians involved in developmental programming for these health sectors have very few references or guidelines upon which to base their decision-making. There is a need for a worldwide standardi-

**Figure 1. Emergency Department Survey Instrument**

**Utilization** (total annual patient census in various categories)

Presenting at: entire hospital ☐ ED ☐ Urgent Care ☐

Admitted to hospital: ☐

Patients seen by: Physicians ☐ NPs ☐ RNs ☐ LPNs ☐

Patient acuity: Emergent ☐ Urgent ☐ Non-Urgent ☐ N/A ☐

Presentation time: 7am - 7pm ☐ 7pm - 7am ☐

**Patient Demographics** (total annual patient census in various categories)

Age <5 yo ☐ 5-18 yo ☐ 19-55 yo ☐ >55 yo ☐ *N/A ☐

Sex Male ☐ Female ☐ *N/A ☐

Nationality Local citizen ☐ Australia ☐ US ☐ Other ☐ *N/A ☐

* N/A = Data Not Available

**Staff** (total current year ED staff)

Physicians ☐ NPs ☐ RNs ☐ LPNs ☐ Other staff ☐

**Physician Characteristics**

**Specialty**

Anesthesia ☐
Int. Med ☐
Ob-Gyn ☐
Orthopedics ☐
Pediatrics ☐
Psych ☐
Pub. Hlth ☐
Surgery ☐
Other ☐
Specify: ☐

**Emergency course certfication**

Adult Cardiac Life Support ☐
Pediatric Life Support ☐
Advanced Trauma Life Support ☐
Mass Casualty ☐
Other (specify) ☐

**Training Location**

Local med school ☐
Australian med school ☐
US med school ☐
Other (specify): ☐

**CME**

Avg hrs / physician / year ☐

## Nurse Characteristics

**Specialty**

| | |
|---|---|
| Emergency | |
| Critical Care | |
| General | |
| Other (specify): | |

**Emergency course certification**

| | |
|---|---|
| Adult Cardiac Life Support | |
| Pediatric Life Support | |
| Advanced Trauma Life Support | |
| Mass Casualty | |
| Other (specify): | |

**Training Location**

| | |
|---|---|
| Local nursing school | |
| Other (specify): | |

**Continuing Education**

Avg hrs / nurse / year

## Schedule

| | Weekdays | | | Weekends | | |
|---|---|---|---|---|---|---|
| | Day | Evening | Night | Day | Evening | Night |
| Physicians | | | | | | |
| Nurse Practitioners | | | | | | |
| Nurses | | | | | | |
| Lab staff | | | | | | |
| Xray staff | | | | | | |
| Clerical | | | | | | |
| Orderlies | | | | | | |

## Physical Plant

**Inside: Treatment Area**

| | |
|---|---|
| total treatment area sq ft | |
| patient beds | |
| avg sq ft / pt treatment area | |
| sq ft / resuscitation room | |

| | *Circle yes or no:* | |
|---|---|---|
| controlled entrances | Yes | No |
| centralized staff work area | Yes | No |
| adequate patient privacy | Yes | No |
| clean | Yes | No |
| instruments out of sight | Yes | No |
| adequate space | Yes | No |
| adequate lighting | Yes | No |
| beds & chairs adequate | Yes | No |
| resuscitation/trauma room | Yes | No |
| critical care area | Yes | No |
| urgent care area | Yes | No |
| private OB/Gyn exam area | Yes | No |
| Capable of ENT/Optho exams | Yes | No |

**Inside: Treatment Area, continued**

| | | |
|---|---|---|
| designated suture area | Yes | No |
| orthopedic area | Yes | No |
| staff lounge | Yes | No |
| hazardous materials shower | Yes | No |
| respiratory isolation area | Yes | No |
| violent patient isolation area | Yes | No |
| storage area | Yes | No |
| radio communications area | Yes | No |
| separate public & staff restrooms | Yes | No |
| patient tracking board | Yes | No |
| water fountain | Yes | No |
| ED located near lab | Yes | No |
| ED located near radiology | Yes | No |
| ED located near OR | Yes | No |
| ED located near ICU | Yes | No |

**Inside: Reception Area**

| | |
|---|---|
| Sq footage | |
| # chairs | |

| | | |
|---|---|---|
| services brochure | Yes | No |
| educational posters | Yes | No |
| nonsmoking area | Yes | No |
| children's area | Yes | No |
| bulletin board | Yes | No |
| telephone access | Yes | No |
| privacy area | Yes | No |
| placard identifying staff | Yes | No |

**Outside**

| | | |
|---|---|---|
| adequate signage | Yes | No |
| adequate parking | Yes | No |
| ambulance ramp | Yes | No |

**Critical Equipment**

| | Number |
|---|---|
| cardio-respiratory monitors | |
| non-invasive oygen saturation monitors | |
| blood pressure monitors | |
| sphygmanometers | |
| stethoscopes | |
| portable x-ray | |
| electrical back-up generator | |
| mechanical respiratory ventilator | |
| resuscitation supply cart | |
| Intavenous flow pumps | |
| suction unit | |
| oxygen | |
| bag-valve mask manual ventilators | |

**Patient-Centered Standards**

| | | |
|---|---|---|
| Admission triage screening | Yes | No |
| Discharge instructions | Yes | No |
| Patient and family rights | Yes | No |
| Assesment of patients | Yes | No |
| Patient care protocols | Yes | No |
| Patient and family education | Yes | No |

**Emergency Department Management**

| | | |
|---|---|---|
| Department director | Yes | No |
| ED policy/procedure manual | Yes | No |
| ED operations manual | Yes | No |
| ED orientation manual | Yes | No |
| Medical records management | Yes | No |
| Staff qualifications or credentialing system | Yes | No |
| Staff education | Yes | No |
| Departmental budget | Yes | No |
| Regular staff meetings | Yes | No |
| Infection control program | Yes | No |
| Engineering maintenance plan | Yes | No |
| Fire safety plan | Yes | No |
| Quality management and improvement process | Yes | No |
| Morbidity & mortality case review process | Yes | No |

**Staff Interview Questions**

During your experience in the ED, did there appear to be adequate numbers of staff members? Yes No

Are you aware of any prior difficulties at the ED regarding the adequacy of staff numbers? Yes No

Please name three strengths and three weaknesses of the ED?

| Strengths | Weaknesses |
|---|---|
| | |
| | |
| | |

zation of methods and nomenclature involved in emergency medicine. An instrument for assessment is here provided to assist others in standardizing methods for rapid evaluation of emergency response capacity among emergency care facilities throughout the world. The final intended outcome of this report is the promotion of global health through development of emergency medical services. Through application of this assessment tool, decision-makers may also gain evidence to better guide their efforts of program development for emergency medical services.

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To start early is easy going, to start late is breakneck

E mua āta haere, e muri tat kimo

**Maori proverb**